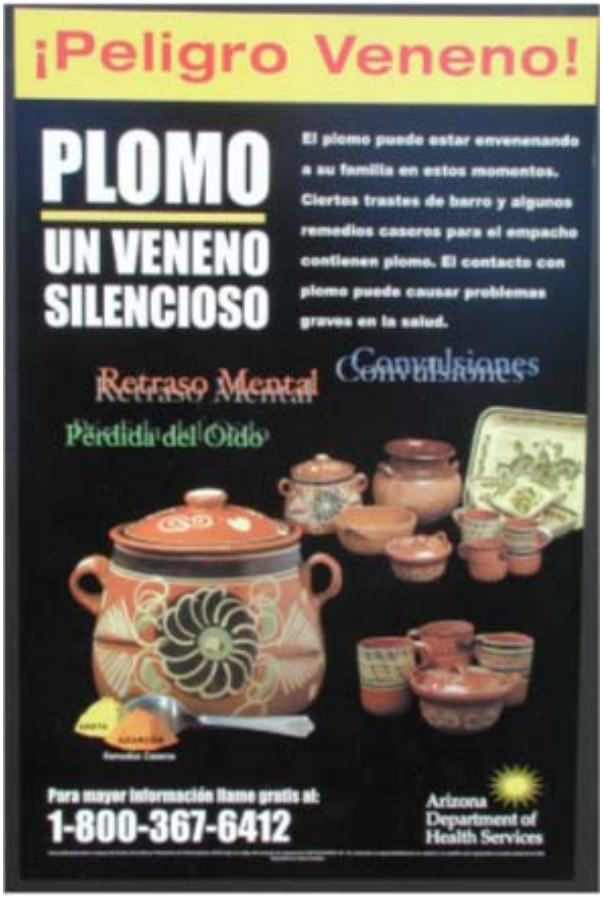
Lead Poisoning in Arizona

Annual Report 2001



Arizona Department of Health Services
Bureau of Epidemiology and Disease Control Services
Office of Environmental Health

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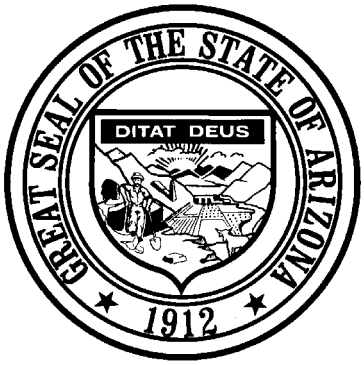

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Executive Summary

The Arizona Department of Health Services maintains the lead and pesticide exposure registries for Arizona. The program staff develop lead poisoning prevention programs, investigate cases with elevated blood lead levels, and conduct educational outreach activities. The following items highlight program activities and findings in 2001:

- Laboratories and health care providers reported 163 children with lead poisoning in 2001. Lead poisoning in children is defined as blood lead levels equal to or greater than 10 micrograms of lead per deciliter of blood ($\geq$ 10 ug/dL). Eighty-two percent (82%) of the childhood cases (134 cases) were in the lower ranges of lead poisoning, 10 to <20 ug/dL. The remaining 29 cases (18%) were in the moderate to severe range of lead poisoning ($\geq$20 ug/dL).

- The program contacted 90% of the lead poisoning cases' families by phone, mail, or in-person and provided lead poisoning prevention advice and educational materials. Cases that could not be contacted by any means were referred back to the medical provider and to their health plan.

- Laboratories were required to report all blood lead test results for the first time in 2001. Physicians are required to report elevated blood lead levels ($\geq$10 ug/dL for children; $\geq$ 25 ug/dL for adults). These data will provide screening information that will help characterize lead poisoning trends statewide.

- Physicians and laboratories reported 40 adult cases with blood lead levels $\geq$25 ug/dL in 2001. The program has identified 110 specific industries with a high risk of lead exposure. Industry education forums were conducted to help high-risk industries to identify risk factors and implement prevention activities.

1.0 Lead Surveillance Program Activities

The Arizona Department of Health Services Lead Poisoning Prevention Program develops local lead poisoning prevention programs, maintains the statewide registry for recording cases with elevated blood lead levels, and conducts educational outreach activities. The program maintains a statewide lead poisoning registry for children and adults with blood lead levels greater than or equal to 10 ug/dL. The program provides case follow-up including environmental investigations, home visits, and physician assistance.

2.0 Childhood Lead Poisoning

Childhood lead poisoning is a significant environmental health problem, yet it is entirely preventable. Lead poisoning prevents children from reaching their full potential. Children ages six years old and younger are particularly susceptible to lead poisoning. Ingestion of lead, through hand-to-mouth behavior, is the primary pathway of exposure. Minority children, poor children, and those living in older housing are at higher risk. Lead exposure prevention is key to ensure declining blood lead levels.

The childhood lead poisoning prevention program provides childhood case follow-up that meets or exceeds the Centers for Disease Control and Prevention 1997 guidelines in "*Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials*." For lead poisoning cases of 10 to < 20 ug/dL, the ADHS provides prevention counseling to the family by phone and mails educational materials. If the family cannot be contacted by telephone, the program mails educational materials and a certified letter requesting that the family contact the program staff.

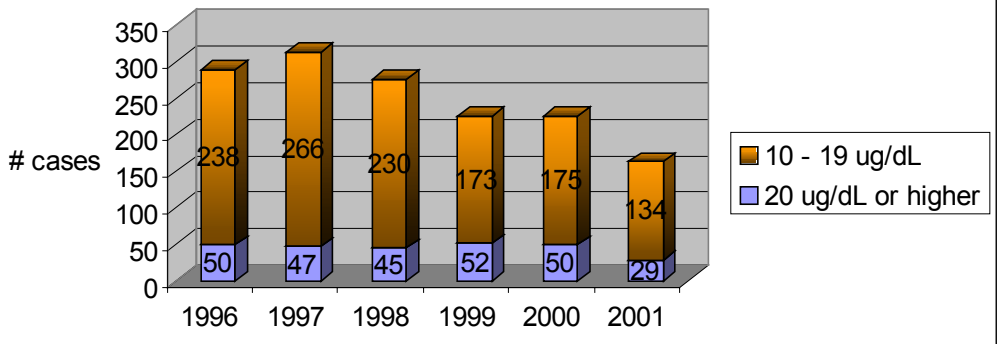
The program performs environmental investigations for cases that are moderate to high in severity (≥ 20 ug/dL) and for persistent levels ≥15 ug/dL. Environmental investigations consist of an in-home interview, environmental sampling to identify lead sources, and specific intervention information for the family. Some county health departments assist the program with case follow-up. Case management involves contact with the family to ensure proper medical and environmental follow-up. The program provides follow-up information to the case's physician that is essential to clinical management. This information includes source identification and prevention recommendations.

Registry Data

Laboratories and health care providers reported 163 children with lead poisoning (≥10 ug/dL) in 2001. Figure 1 displays the number of childhood lead poisoning cases for 1996 to 2001. Eighty-two percent (82%) of the childhood cases (134 cases) were in the lower ranges of lead poisoning (10 to < 20 ug/dL). The remaining 29 cases (18%) were in the moderate to severe range of lead poisoning (≥ 20 ug/dL).

Figure 1

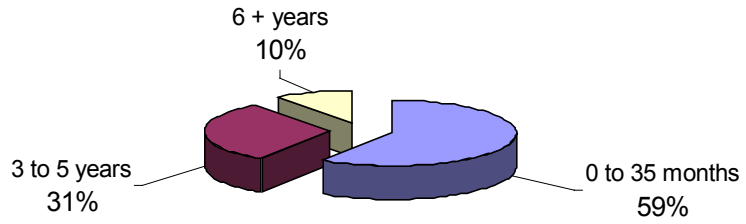
Number of AZ Childhood Lead Poisoning Cases by Year



Prevention program staff contacted 90% of the cases' families by phone, mail, or in-person and provided lead poisoning prevention advice and educational materials. Cases that could not be contacted by any means were referred back to the medical provider and to their health plan.

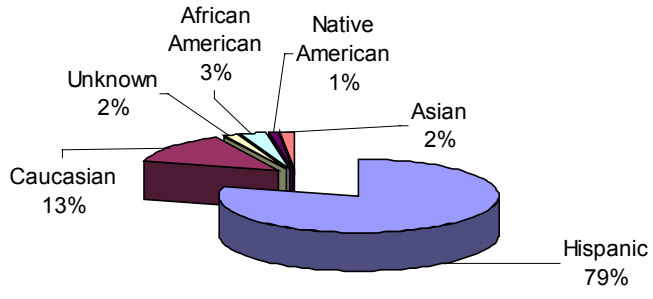
Ninety percent (90%) of the cases were in children less than 6 years old. The majority (59%) of the children were aged 6 months to 3 years (Figure 2).

Figure 2
Ages of Children with Lead Poisoning
2001



Approximately 79% of lead poisoning cases were Hispanic (Figure 3). It is not known whether the disproportionate number of Hispanic cases was the result of socioeconomic factors, sampling bias, a random effect, or some unidentified risk factor. The over-representation of Hispanic children persisted in the group of children reported to have blood levels of ≥20 ug/dL.

Figure 3
Child Lead Poisoning Cases by Race/Ethnicity
2001

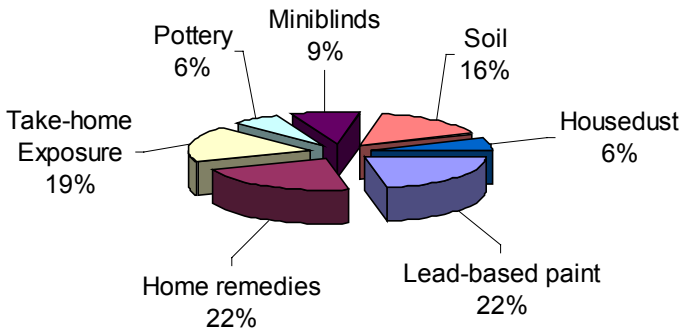


Lead Poisoning Sources

Potential sources of lead exposure were identified during investigations of the child's environment for cases with blood lead levels ≥ 20 ug/dL or with persistent blood levels of ≥15 ug/dL. Paint, soil, dust and water samples were routinely taken for laboratory analysis. Other sources investigated included home remedies, hobbies, take-home exposures, toys, and imported pottery.

Lead-based paint and home remedies were the most frequently identified lead sources. However, take-home exposure (lead coming home from adult occupational exposure) was an important source of lead exposure in 2001. The distribution of major sources of moderate to severe lead poisoning identified in 2000 is illustrated in Figure 4.

Figure 4
Lead Sources for Children with Blood Lead Levels ≥ 20 ug/dL
2001



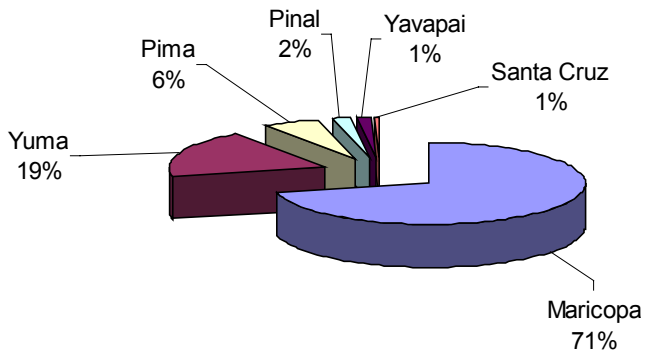
There has been a slow decline in the number of reported cases of childhood lead poisoning over the last several years (Figure 1). However, the number of cases of severe childhood lead poisoning have been more consistent. Lead glazed pottery and home remedies (azarcon & greta) have been identified as a consistent sources of the severe lead poisoning cases.

The program implemented a media campaign in 2001 to increase public awareness of these important lead sources. The campaign includes radio and television advertisements (with donated air time) and a grass-roots awareness campaign. Approximately $240,000 of television advertising time were donated to the campaign by Mas! and Cox Cable. An evaluation of the program effectiveness indicated that 92% of those persons surveyed recalled the media campaign. Participants, health professionals, and lay health workers in the area believed that the campaign significantly benefited the community.

Case Distribution by County

Figure 5 shows the distribution of childhood lead poisoning cases by county. Maricopa, Pima, and Yuma Counties accounted for 96% of all reported cases. The major Arizona population centers of Phoenix, Tucson and Yuma, are located within these counties.

Figure 5
Percent of Child Lead Poisoning Cases by County, 2001



Higher-risk Zip Codes

Lead poisoning prevalence in Arizona is currently difficult to assess due to a lack of comprehensive statewide data and limited screening. The best estimate of prevalence rates is based on 1998 Arizona Health Care Cost Containment System data. More comprehensive prevalence data using the new and complete laboratory reporting data will be published and distributed in the fall of 2002.

Arizona Health Care Cost Containment System providers screened 12,506 children, ages 5 years and younger in 1998. The prevalence rate based on these data was 2.1%. The nationwide average is approximately 4.4%.

An analysis by Zip Code of residence using the 1998 data identified areas of increased risk. Arizona Health Care Cost Containment System screening occurred in 275 Zip Codes, approximately 60% of the Zip Codes in Arizona. Table 1 presents lead poisoning prevalence rates and screening ratios for each Zip Code where more than 100 children were screened. The highest lead poisoning prevalence rates were 8.3% and 7.9% in Phoenix Zip Codes 85006 and 85007. The percentage of all children aged 0 – 6 years old in these Zip Codes ranged from 2.1% to 5.4%. These low screening percentages suggest that caution is warranted in using these data as the only criteria for screening or for characterizing trends.

Table 1. Arizona Zip Codes with Highest Prevalence Rates of Lead Poisoning for Children Ages 0-5 Years

Zip Code	City	Number Screened	Prevalence Rate (%)
85006	Phoenix	372	8.3
85007	Phoenix	177	7.9
85349	San Luis	130	5.4
85621	Nogales	111	4.5
85364	Yuma	433	3.9
85031	Phoenix	135	3.7
85034	Phoenix	143	2.8
85607	Douglas	113	2.7
85281	Tempe	152	2.6
85009	Phoenix	652	2.5
85015	Phoenix	253	2.4
85714	Tucson	129	2.3

3.0 Adult Lead Poisoning

Laboratories and health care providers reported 40 adult cases with blood lead levels ≥25 ug/dL in 2001. The 2001 Arizona adult lead poisoning registry data for cases ≥ 25 ug/dL are summarized in Figure 6.

Adult lead poisoning commonly occurs from exposure to lead used in the workplace. High-risk occupations for adult lead exposure include: manufacturing or recycling of batteries, metals, and ammunition; mining and smelting; radiator and automotive repair; soldering and welding; production of PVC plastic, crystal, ceramics, and glass; remodeling and demolition of older housing and structures; and indoor/outdoor shooting ranges.

The program has identified 110 specific industries with a high risk of lead exposure. Adults also may be exposed to lead in the home through hobbies and through renovation of older homes. Figure 7 displays the sources of adult lead poisoning cases in which occupation was a known risk factor in 2001.

Figure 6
Number of Adult Lead Poisoning Cases ≥ 25 ug/dL by Year
2001

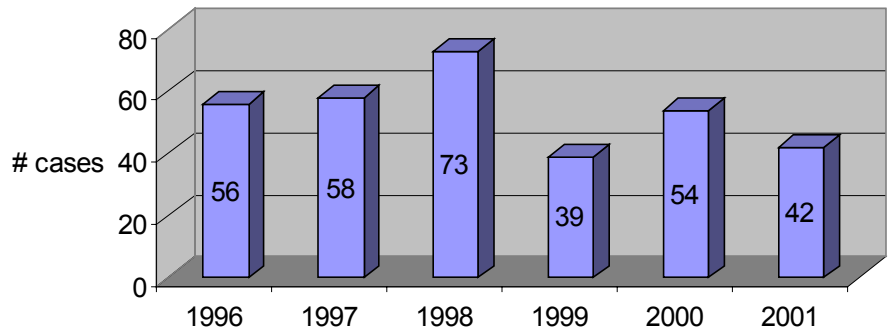
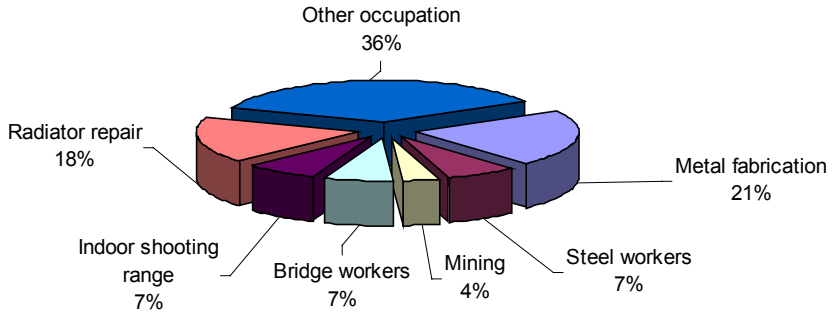


Figure 7
Percent of Adult Lead Poisoning Cases by Occupation
2001



4.0 Summary

- The Lead Registry recorded 163 children with lead poisoning in 2001. Eighty-two percent (82%) of the childhood cases were in the lower ranges of lead poisoning. Eighteen percent (18%) were in the moderate to severe range of lead poisoning (≥20 ug/dL).

- Lead-based paint and home remedies were the most frequently identified lead sources. However, take-home exposure (lead coming home from adult occupational exposure) was an important source of lead exposure.

- The program implemented a media campaign in 2001 to increase public awareness of the lead hazard from home remedies and pottery. The campaign includes radio and television advertisements (with donated air time) and a grass-roots awareness campaign. An evaluation of the program effectiveness indicated that 92% of those persons surveyed recalled the media campaign. Educational materials are available by calling 1.800.367.6214.